

Temple forests in India's forest development

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Abstract. Historically the temple forests in India have served many spiritual and religious purposes. This paper stresses on the use of the underused repertoire of sacred acts to integrate the benefits of temple forests in rural development. The tree/plant species, planting design and the rituals related to their worship documented in the great epics, vedas and upanishads are of great value especially in the context of promoting forest development and the forest development led agricultural development. The Star, Planet and Zodiac forests contain a large number of native tree species ideally suited to tropical stress and drought. The promotion of temple forests would help developing forests in the upstream areas which can help create climax forests and aid in soil and moisture conservation to help improve the productivity of downstream agriculture. As the chief utilitarian value of these temple trees and plants is in terms of the native (ayurvedic) medicine, their propagation would not only develop the downstream farming opportunities, but also promote the native medicine sector.

Introduction

Worship of trees and plants has been a documented part of religious practice in India since the hunting-gathering stage (circa 600 A.D.) [3]. The rituals of tree worship and the benefits derived therefrom are outlined in 'Vrathas' (Sanskrit ritual handbooks) written by the enunciators of Hindu theology (sages like 'Sutha puranikas'). While an estimate of the number of temple forests in India is not available, their presence has been reported in the Western Ghats (Kerala, Karnataka and Maharashtra), Aravalli hills (Rajasthan), Khasi hills (Assam), and parts of Madhyapradesh, Bihar and Orissa [4].

According to Hindu theology, for people to lead a life that is satisfactory in all respects, they must worship to appease the deities. Each deity is said to control one or several of the physical and moral needs of life. For instance, education is believed to be promoted by 'Ganapathi', wealth by 'Lakshmi', forests by 'Vanadevi', rain by 'Varuna', wind by 'Vayu' and so on. The theology also prescribes basing plans and actions upon a

'horoscope' which predicts the future from the positions of constellations and Stars (S), Planets (P) and the Zodiac (Z) at an individual's birth.

Particular deities and SPZ's are considered to be made manifest in specific plant and tree species. These species figure prominently in religious practice. In addition to idols, the more easily recognized temples also contain these designated plant/tree species to facilitate worship. The very act of planting of specific plants/trees is also considered to be an act of worship. The exact form of the rituals of plant/tree worship depends upon the age of a person, the mundane problems and the capacity to worship, and are prescribed by 'astrologers'. Of course, people also acknowledge the utilitarian value of religious plant/tree species as the source of native (ayurvedic) medicines¹.

There are seven types of temple forests/gardens in Hindu theology—Shiva Panchayathana, Star forest, Nine-planet forest, Zodiac forest, Vrata garden, Ashoka garden and Kadamba garden. The Karnataka Forest Department is developing these gardens in the Western Ghats on Bakkal-Sirsi Road. This paper will concentrate upon the Star forest (plants/trees representing stars), Planet forest (representing the nine planets) and Zodiac forest (representing the 12 zodiac signs), as they are largely recognized and appreciated by people and have higher potential for forest development.

While increased attention is being directed towards identifying institutions for promoting and sustaining forestry development, relatively little attention has been focussed on the potential of utilizing the religious practices in forest and watershed development. Following from the classic work of Gadgil and Vartak [5] on sacred groves, this paper examines the creation and protection of religious forests part of the underused repertoire of sacred acts which can promote social goals.

A modest attempt is made to highlight how the plants/trees are connected with the SPZs, the way they are laid out, and the values people attribute to these forests. The associated opportunities for forest development and watershed development are discussed.

Religious/institutional significance of trees

The ancient sages, who lived in an environment of trees and mountains, actively promoted the worship of the deities represented by the trees – as was prescribed in the even more ancient texts (Bhagavatha, Mahabharatha, Shiva purana, Skanda purana, Vayu purana, and Varahamihira Brihath-samhithe). This knowledge is still being passed on from generation to generation. In order to decide which temple tree/idol to worship, people

¹ Ayurveda is a form of medicine founded by the sages Dhanwantari, Sushruta and Charaka.

usually approach astrologers, temple priests, or knowledgeable elders. Astrologers and priests are professionals who may charge a small fee for a consultation. The prescribed worship may range from 3 to 48 days per year, depending upon the capacity (time, income) of the devotee to worship. The objectives of the devotees worship differ by sex. The main reasons for tree worship among women are: (1) unmarried women praying for getting married to a good husband, (2) married women praying for a healthy child (usually a son), and (3) old women praying for self-actualization. Men (most often farmers) pray (1) for realizing a good harvest, (2) for resolution of a property or domestic quarrel in a family and (3) for health and long life of members of their family.

The trees *Ficus religiosa*, *Acacia ferruginea*, *Aegle marmelos*, and *Ficus glomerata*, are commonly recognized by devout people in India as strictly religious trees. At least one of these trees appears in each of the seven types of temple forests. These are also important as sources of native medicines. They were initially planted exclusively for worship, not utilitarian purposes. The norms of the theology recommended these trees to be worshipped, and prescribed taboos for violators (like the belief that no wood can be removed from them without inviting the wrath of god). From personal experiences gathered from many senior people, people in general did not utilize religious trees for firewood or charcoal up to the early 1960's. Due to current scarcity of these resources, the old taboos are less effective and some sacred graves have been destroyed.

Originating from the foot hills of the Himalayas, *Ficus religiosa*, the Peepal or the Bodhi tree, is found in all the major villages of India. A 2500 year old Peepal tree, still green and growing in Budha Gaya, is believed to have sheltered Budha where he attained 'Nirvana'. It is more common in settled areas than in the forests. There is a belief that bad deeds would be forgiven if the tree is planted and an altar is built around to enable people to worship. This is perhaps an important reason for its appearance in most villages, offering a place for worship, social/religious activities, marriages, informal courts, night meetings and resting place for roadside travellers. During the early hours of the day, people worship the tree by circumambulating the tree and bowing with respect. It is believed that the tree embodies the trinity (Bramha: the creator, Vishnu: the protector and Shiva: the destroyer), for which people attach great religious significance. The twigs of the tree are used in offering to the 'fire god' (Agni).

Acacia ferruginea (Shami) represents the star Alpha Delphi. It is the most feared and respected planet (tree) as it represents the planet Saturn, the planet for which people fear the most. There is a belief that the ill effects of this planet spreads over a span of 7 years and 6 months every 30 years in the

life time of an individual. The leaves of this tree have special significance on the 'Vijayadashami' day (during October of any year). On this day, 'Arjuna' the great warrior of Mahabharatha (epic) who kept his bow and arrow on the top of this tree is believed to have fought and won one of the battles with his opponents - 'Kauravas'. The day marks the exhibition of 'bravery' and the Hindu Kings of the former princely kingdoms, worship the tree by cutting a small branch of the tree. The common people on the other hand exchange the (bipinnately compound) leaves of the tree with elderly people and friends and pay their respects. The festival is celebrated throughout the country and takes different forms for worship of goddess 'Parvathi'/'Durga'.

Aegle marmelos is a slow growing tree exclusively used for worshipping the lord Shiva throughout India. The leaves which are tripinnate are believed to represent the three eyes and three arms of the lord. There is a good market for the leaves during Shiva festival days and also near Shiva temples.

Ficus glomerata believed to represent lord 'Dattatreya' the son of the trinity is another tree commonly grown in the villages. Other popularly grown species but not so much recognized by villagers as strictly religious trees, are *Mangifera indica* (Mango), *Azadirachta indica* (Neem), *Syzygium cumini* and *Mesua ferra*. It is a common practice for people to celebrate tree marriage - Neem with Peepal tree by planting them side by side in such a way that they grow together. Neem is supposed to represent the goddess (devi) while Peepal is supposed to represent a male god. It is believed that circumambulation of the trees after bath in the morning cures sterility. Neem is also widely recognized by people for medicinal value. With the paucity of medical facilities in the villages, Neem serves as instant medicine for most common types of ailment. *Syzygium cumini* offers good fruit seeds useful in curing diabetes while *Mesua ferra* is grown for flowers with excellent smell both for offering to god and also as an ornament for women.

Temple forests as a source of forest development

Star forest

The purpose of a star forest is to facilitate the worship of stars personified in the form of trees rather than idols, in a prescribed manner. Among the 27 stars, three stars (Gamma Geminorum, Pollux and Altair) are represented by shrubs, while the rest are represented by trees. It is believed that the 27 stars (star groups) play an important role in shaping the destiny of people. Their importance begins right from the moment of birth of an

Table 1. Composition and utilitarian value of star forest

Star/Star group		Position		Plant/tree species	Utilitarian value
Number	Name	Degree	minute		
1.	Beta Arietis	10	26	<i>Strychnos nuxvomica</i>	Firewood
2.	Arietis	23	24	<i>Embllica officinalis</i>	Pickling
3.	Eta Tauri	36	27	<i>Ficus glomerata</i>	Avenue Tree
4.	Aldebaran	46	15	<i>Syzygium cumini</i>	AI, HC
5.	Lambda Orionis	58	38	<i>Acacia catechu</i>	AI, Tanning
6.	Gamma Geminorum	63	26	<i>Piper longum</i>	Spice
7.	Pollux	89	42	<i>Bambusa arundinacea</i>	Mat weaving
8.	Delta Cancri	105	10	<i>Ficus religiosa</i>	Worship only
9.	Zeta Hydrae	107	20	<i>Mesua ferra</i>	Sleepers, HC
10.	Regulus	126	18	<i>Soymida febrifuga</i>	Firewood
11.	Theta Leonis	139	52	<i>Butea monosperma</i>	Food plates
12.	Denebola	148	5	<i>Ficus infectoria</i>	AT
13.	Delta Corvi	169	55	<i>Spondias mangifera</i>	Firewood
14.	Spica	180	18	<i>Aegle marmelos</i>	Worship only
15.	Arcturus	180	42	<i>Terminalia ariuna</i>	CBT, HC
16.	Alpha Librae	207	28	<i>Flucortia montana</i>	Firewood
17.	Delta Scorpii	219	39	<i>Mimosops elengi</i>	OT
18.	Antares	226	13	<i>Pinus longifolia</i>	Resin industry
19.	Lambda Scorpii	239	46	<i>Canarium strictum</i>	Resin industry
20.	Lambda Sagittarii	251	2	?	?
21.	Phi Sagi	256	38	<i>Artocarpus heterophyllus</i>	Firewood
22.	Altair	278	12	<i>Calotropis gigantea</i>	Worship only
23.	Alpha Delphi	293	50	<i>Acacia ferruginea</i>	Worship only
24.	Lambda Aquarii	318	2	<i>Anthocephalus cadamba</i>	Firewood
25.	Markab	329	56	<i>Melia azadirach</i>	AT, Medicinal
26.	Algenib	350	33	<i>Mangifera indica</i>	Plywood, fruit
27.	Zeta or Mu Piscium	356	20	<i>Bassia latifolia</i>	Fodder, AT, CBT

Note: AT - Avenue tree, CBT - Canal bank tree, FT - Fodder tree, OT - Ornamental tree, AI - Agricultural implements, HC - House construction

individual. Even the name of a person is given in accordance with the star prevalent at the time of his/her birth.

The stars are located at specified angles on the North-South (0 degree-180 degrees) base line. The tree/plant species as recommended by religious texts are planted at these specified angles (Table 1 and Fig. 1) [2, 7, 10]. It is important to note that a star name could represent just one star or a group of stars decided by the astronomers. For instance Lambda Aquarii is a group of 100 stars, Zeta Piscium is a group of 32 stars, Lambda Scorpii a group of 11 stars, while Arcturus represents only one. The northward



Fig. 1. Star forest.

movement of the earth (Uttarayana) beginning on the 21st December (the longest night) and the southward movement of the earth (Daxinayana) beginning of the 21st June (the longest day) in any year are crucial in locating the stars. The spacing for trees is determined by examining the sun rays descending on the tree at dawn or at dusk based upon the northward or southward rotation of the earth [8].

The star forest is bigger than other types of temple forests and contains a larger number of species. Therefore it would be useful as an institution promoting biological reserves. But star forests are difficult to institute due

to land scarcity and capital limitations. In addition, the orthodox planting of a star forest requires considerable skill, and experts in the field are hard to find.

Nine planet temple forest

A planet forest is more commonly understood and appreciated by the general population than a star forest, and as a result is far more common. The nine planets (Navagraha)² are supposed to monitor and control the destiny of an individual both independently and in combination. The sun and moon are considered as planets in this system. The position of the 'planets' at the time of birth of an individual determines the configuration of his/her star/star group and the zodiac sign. Even to this day people in India get the SPZ configuration through a horoscope written based upon the birth time and birth place of an individual.

Among the nine planets in the temple, five of them namely Venus, Mars, Jupiter, Saturn and Moon are represented by trees, two of them (Sun and Mercury) are represented by shrubs and two of them (Rahu and Kethu) are represented by grasses. Each of the planets is consecrated in the form of an idol and/or the designated plant species (Fig. 2). The Sun (idol/plant) positioned at the center of the temple faces the east and is represented by *Calotropis gigantea*. This plant yields a white latex used to cure scabies, dysentery, jaundice, epilepsy, asthma and cholera. People worship the Sun god every day morning and particularly on Sundays. In the countryside farmers make it a point to bow before the early morning sun every day before they attend to their routine.

Theologically planet Saturn is considered both as a son and an enemy of Sun. This planet is represented by *Acacia ferruginea*, a tree with characteristic small bipinnately compound leaves. It is located on the west of the temple. People throng to worship the tree on every Saturday, considered as an auspicious day for the worship of Saturn.

² From the vedas the plant species governing the planets are referred in the following Sanskrit verse:

- Arkasam idam Adithyaya (Calotropis gigantea to represent Sun)*
- Palashagam Somaya (Butea monosperma to represent Moon)*
- Khadiram Angarakaya (Acacia catechu to represent Mars)*
- Apamargam Bhudhaya (Achyranthus aspera to represent Mercury)*
- Ashwatham Brihaspathaye (Ficus religiosa to represent Jupiter)*
- Audumbarag Shukraya (Ficus glomerata to represent Venus)*
- Shamigam Shanaischaraya (Acacia ferruginea to represent Saturn)*
- Rahuve Doorvaya (Cynodon dactylon to represent Rahu)*
- Kethuve Kushaya (Saccharum spontaneum to represent Kethu)*

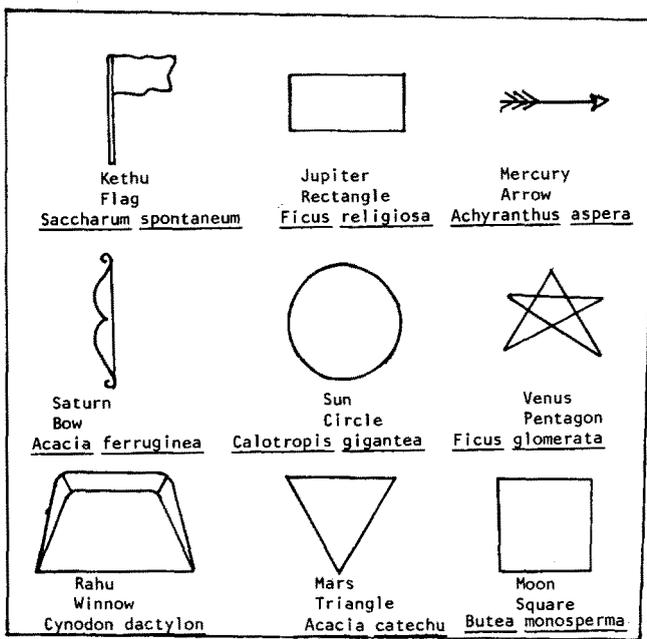


Fig. 2. Nine planet temple forest. Under the diagram of each planet, the name of the planet, emblem and the name of the plant/tree species representing the planet are listed in that order.

The Jupiter tree *Ficus religiosa* is located at the North of the temple and is referred to as the 'king of trees' [11]. In the villages people use the tree as a 'witness' and promise to speak the 'truth' while standing under the tree while transacting. The tree is drought resistant, shade providing and spreading. This planet is believed to always exert positive influences on the destiny of the people. Jupiter is believed to ward off the evil effects of planets Saturn, Mars and Rahu. Thursday is the best day to worship Jupiter.

On the east of the temple, the planet Venus is represented by *Ficus glomerata*. This is believed to exert positive influence on the economic well being of an individual. Friday is the day of planet Venus and also the day for goddess of wealth. The orthodox followers, like to receive their wages (pay checks), but they do not like to make purchases or remit towards loan on this day.

Acacia catechu represents the planet Mars and is located on the South of the temple garden. Tuesday is the day of this planet. People do not like to begin any good activity on this day, if it is to bring prosperity to their family. Mars is also believed to exert evil influences on an individual.

Wednesday is the day of planet Mercury which is represented by a shrub *Achyranthus aspera*. The equivalents for planets Rahu and Kethu are hard

to find in the astronomy of the West. They are represented by two grasses *Cynodon dactylon* and *Saccharum spontaneum* respectively. *Saccharum spontaneum* is especially used on the days of Solar and Lunar eclipses to tide over the evil effects during the eclipses.

The common understanding of planets is stronger than the Star and the Zodiac forest (described below), and planet forests require less land and capital to create. Hence to promote small local planting, and in situations where more individual action rather than community action is needed, it may be better to promote planet forests than star forests.

The zodiac forest

The zodiac is an imaginary belt in the space following the path of Sun. The belt is divided into 12 constellations represented by symbols, zodiac signs and trees. People attach special significance to their zodiac sign, as it would help provide astrological predictions.

Each person born on any day is believed to be influenced by a zodiac sign, similar to the planet and star configuration. An important feature of this forest type is that all the 12 zodiac signs are exclusively represented by trees (whereas in the Star forest and the planet forest, in addition to trees, there were shrubs and herbs). Zodiac forests are laid out in a square shape (Fig. 3). The lay out is designed in such a way that the '... shadow of the sun falls on the particular plant or flower during the movement of the sun in that particular zodiac sign.' [9]

From the zodiac forest it is interesting to note that a few species of trees/plants appear on at least two of the three types of temple forests/gardens discussed here: *Acacia ferruginea* represents the zodiac Aquarius, the planet Saturn and the star Alpha Delphi; *Ficus religiosa* represents the zodiac Sagittarius, the planet Jupiter and the star Delta Cancri; *Butea monosperma* represents the zodiac Cancer, the planet Moon and the star Theta Leonis; *Acacia catechu* represents the zodiac Scorpio, the planet Mars and the star Lambda Orionis; *Mimosops elengi* represents the zodiac Libra and the star Delta Scorpii and *Mangifera indica* represents the zodiac Virgo and the star Algenib. These six species are easily identified by common people and are very popular.

Planting and maintenance

It is important to note that each of the above tree/plant species could be planted and worshipped in isolation in the planet/temple garden. Hence the

Pisces Jupiter <u>Ficus</u> <u>bengalensis</u>	Aries Mars <u>Pterocarpus</u> <u>santalinus</u>	Taurus Venus <u>Alstonia</u> <u>scholaris</u>	Gemini Mercury <u>Artocarpus</u> <u>heterophyllus</u>
Aquarius Saturn <u>Acacia</u> <u>ferruginea</u>			Cancer Moon <u>Butea</u> <u>monosperma</u>
Capricorn Saturn <u>Dalbergia</u> <u>latifolia</u>			Leo Sun <u>Stereospermum</u> <u>chelonoides</u>
Saggiarius Jupiter <u>Ficus</u> <u>religiosa</u>	Scorpio Mars <u>Acacia</u> <u>catechu</u>	Libra venus <u>Mimusops</u> <u>elangi</u>	Virgo Mercury <u>Mangifera</u> <u>indica</u>



Fig. 3. Zodiac forest. In each of the cells, the zodiac sign, name of the controlling planet and the name of the tree species representing the zodiac sign are furnished in that order.

construction and development of a planet forest depends upon the degree of SPZ influences on those who donate for such activities. At any particular time if an individual believes that Saturn is exerting evil influences, then the person may prefer to plant *Acacia ferruginea* (usually) in the vicinity of a temple so that the tree is well protected³. Again at some other moment of time, another individual who believes that his/her destiny is influenced by Mars may plant *Acacia catechu* to worship. Hence the development of the planet garden is not necessarily systematic. In many cases, the garden may not have all the planets represented and the plants/trees may not be planted in the prescribed (Fig. 2) design. This is because the initiative to plant religious trees comes from a few individuals who may limit planting only those species which affect their destiny. On the other hand, if the community takes the initiative, it may be possible to develop these forest/garden types in the prescribed design. The maintenance of gardens is by the public in most

‡³ An example, is the 'Vidhurashwatha' the Jupiter tree planted by the great Vidhura of Mahabharatha in Andhra pradesh and the 'Bramhashwatha' in Tirumakudalu Narasipura, Karnataka, India.

cases⁴. The devotees donate part of their earnings for maintenance of the gardens.

Presently the tree worship is on the decline. A decade ago, it was hard to get anyone to cut an aged *Ficus religiosa* tree. This is no longer the case. One of the strong reasons for this transition may be the acute scarcity of fuelwood in the economy. Nevertheless, if the commonly recognized religious trees (*Ficus religiosa*, *Acacia ferruginea*, *Aegle marmelos*, and *Ficus glomerata*) are grown in the vicinity of a temple, people still hesitate to cut them down.

Implications for forest development

The area under forests in India is about 22 percent of the geographical area serving a population of 850 million. Only 10 percent of the area has a 'good' forest cover. The Indian forest policy prescribes a goal of having 1/3 of the geographical area in good forest cover. Given the enormous demand for fuelwood, fodder, fiber and fruits, a nationwide program of 'Social forestry' (SF) was undertaken from 1983. Under this program, the concept of forestry is carried from its 'territorial' orientation to grass root level, in order to coop and involve people. So far the SF program has not attained remarkable progress⁵ though the implementation is complete in some of the selected States. The farmers who are the main target of the SF program are frequently not taking care of the tree seedlings planted in their fields. Other than the operation of natural hazards, one of the main reasons is the general lack of efforts on the part of farmers towards soil and water conservation [1].

Establishing temple forests in the upper and middle stream areas of watersheds would be of great assistance to SF programs in reducing erosion and maintaining soil and water conservation structures to improve the soil moisture holding capacity. These forests could act as a reserve of trees which can help create climax forests through succession (in the long run). The sacred groves in parts of the country have climax form of vegetation and have genetically diverse tree species useful in tree breeding programs [6]. Prime importance could be given to the development of the four most popular religious trees mentioned earlier. All these tree species are drought resistant and can tolerate a great degree of stress. In addition, all of them are rich sources of native medicines. Hence development of temple forests

⁴ About 70 percent of the sacred groves were managed by the public in Western Ghats, as reported by Gadgil M and Vartak VD (1976) Op.cit. 154-155 p

⁵ Lecture on 'Social Forestry' delivered by Professor Jeff Romm, to the Winrock International Scholars from developing countries, Department of Forestry, University of California, Berkeley, March 3, 1988.

would also indirectly lower the currently very high cost of native (ayurvedic) medicine.

The development of temple forests could be undertaken in two phases. Registered temples and religious institutions have lands earmarked for their maintenance under the land reforms act in several States of India. In the first phase, the trees could be grown in these areas. In the second phase, more temple forests could be developed in upstream. Here it may be desirable to install idols and to plant trees in the vicinity of the temple to reinforce the religious character of these plantings, especially for uneducated and secular farmers. Active creation and promotion of temple forests might reverse and would certainly slow down the dilution and degeneration of their role in the recent years. Farmers would seldom remove trees in the vicinity of a temple or which belong to the temple because of their value system. The temples in the villages are self-sustaining as they depend upon the religious beliefs of the people. By making use of the underused repertoire of sacred acts, the local religious figures (say priests for instance) would serve as very effective vehicles for reforestation. The forest officer(s) could speak to the religious figures requesting them to give a presentation on temple forests or make temple forests eligible for government seedlings and all other subsidy elements. The benefits of such forests are less tangible than some production forests since most of the species are not harvested for fuel wood or timber. But their roles in promoting social forestry goals and in achieving the dry land watershed development are very encouraging.

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